

Instruction Manual



POLARIS Karat Flash Meter

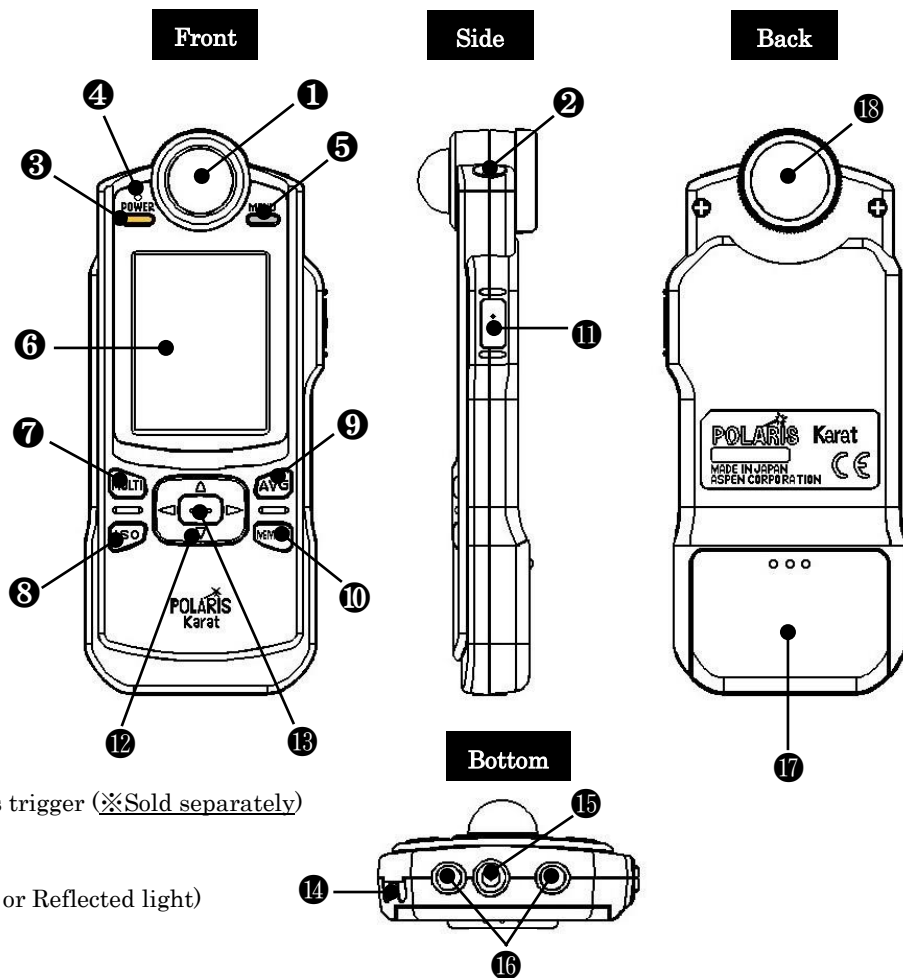
Made in Japan

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1. Name of Parts

- ① Incident Sphere
- ② Sensor (for Reflected light)
- ③ Power Button
- ④ Power Indicator light
- ⑤ Menu Button
- ⑥ LCD Display
- ⑦ Multiple Flash Button
- ⑧ ISO Button
- ⑨ AVG Button
- ⑩ MEMORY Button
- ⑪ Measuring Button
- ⑫ Cross Key
- ⑬ Select Button
- ⑭ Strap Eyelet
- ⑮ Synch Port
- ⑯ Auxiliary fitting for wireless trigger (※Sold separately)
- ⑰ Battery Compartment
- ⑱ Switching Dial (for Incident or Reflected light)



2. Before Using

2-1 Battery Installation

The meter is powered by two AA alkaline batteries.

- Remove the Battery Compartment¹⁷ cover by lightly pressing the ridged area and sliding the cover in the direction indicated by the arrow.
- Insert new batteries into to the Battery Compartment¹⁷ following the polarity symbols.
- Replace the Battery Compartment¹⁷ cover



*If the meter will not be used for an extended period of time, it is recommended to remove the batteries to avoid possible damage caused by battery leaking.

2-2 Power ON

Press the Power Button³ and turn the power on.

The Power Indicator Light⁴ will light up, and the “MENU” will display on the LCD screen. [【See 2-3】](#)

	→ Full battery power remaining
	→ Sufficient battery power remaining
	→ Low battery power remaining
	→ Replace battery immediately

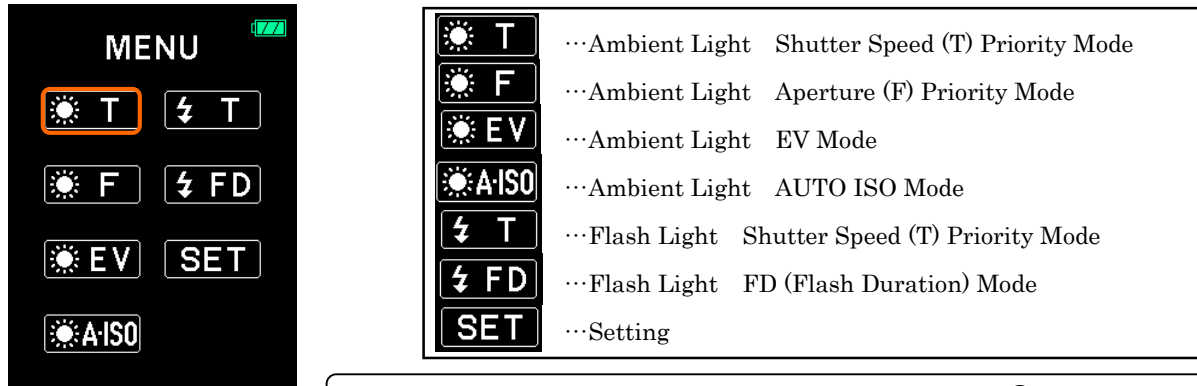
(※Metering not affected by low batteries.)

*To turn off, press and hold the Power Button³ for a few seconds.

*The next time the unit is turned on, the last mode used will be displayed.

2-3 Choosing a Measurement Mode

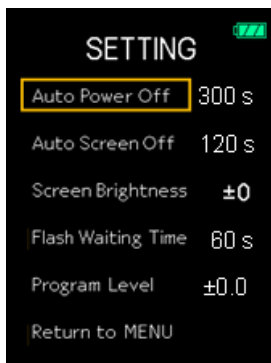
Press the Cross Key¹² to move the cursor and then press the Select Button¹³ to choose a mode.



*To return to the “MENU”, press and hold the Menu Button⁵ for a few seconds.

2-4 Adjusting Settings

- Highlight the SET key and press the Select Button¹³. On the Setting Screen, select a menu item by moving the selector box with the Cross Key¹².
- To modify a menu item, press the Select Button¹³ to move the cursor to the numerical value, which can be adjusted by pressing the up (Δ) or down (∇) icons on the Cross Key¹².
- Press the Select Button¹³ and cursor will be returned to the menu item. After setting, move the cursor to “Return to MENU” and press the Select Button¹³, or press and hold the Menu Button⁵.



(* Factory default settings)

Auto Power Off...	To preserve battery life, the power is automatically turned off when the meter is left inactive for a predetermined length of time. Setting time : 300s • 120s • 90s • 60s
Auto Screen Off...	To preserve battery life, the display is automatically turned off when the meter is left inactive for a predetermined length of time. Setting time : 120s • 90s • 60s • 30s <u>* When the screen has turned off, reactivate it by pressing any button. This will bring back the last screen.</u>
Screen Brightness...	Set the brightness of the display. Brightness range from -5 to +5 (by 1 step)
Flash Waiting Time...	Set how long the meter will wait to take a Flash measurement without synch cord. Setting time : 120s • 60s • 30s
Program Level...	Can be set to modify readings in the range from -0.9 to +0.9 stops.
Return to MENU...	Return to MENU display

2-5 ISO Sensitivity Value Setup

- Hold down the ISO Button **Ⓢ** and press the Cross Key **Ⓜ** (UP Δ / DOWN ∇) to select the desired ISO Sensitivity Value.
- The UP (Δ) Key is used to select a higher value, and the DOWN (∇) Key a lower value.
- Holding down the UP (Δ) Key or DOWN (∇) Key for more than one second continuously increase or decrease the value.
- ISO Sensitivity Value can be changed after taking a measurement. Newly calculated values are displayed when the ISO is changed.
- The procedure for setting values is the same in any mode.
- When the power is turned off, or the batteries changed, the last settings are stored in the memory.

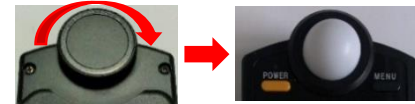
2-6 Light Receiving Method Setup

Select Incident Light Measurement or Reflected Light Measurement with Switching Dial ⑧.

★ Incident Light Measurement : 

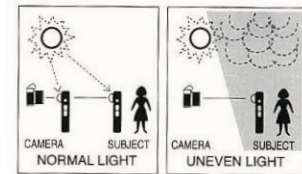
Incident Light Measurement are made by measuring the light

that is falling on the subject. Position the meter near the principle point of the subject with the sphere facing the camera lens.



*Reproduction of light and dark tones will be accurate in the final image because reflectance (or the lack thereof) of the subject does not affect the reading.

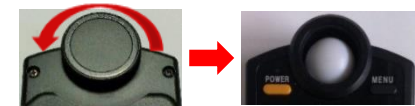
*Please take care that the person holding the meter does not cast a shadow on the Incident Sphere while taking a reading.



★ Reflected Light Measurement : 

Reflected Light Measurement are made by measuring the light

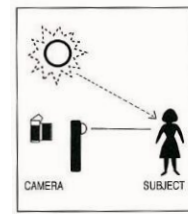
that is reflected by each subject in the camera field of view. When illumination is not even within a scene, representative readings must be made of all light and dark area and then averaged in order to determine the proper exposure.




*The light sensors meter an average of the light received in about 30 degree field of view.

*If you need to take a spot measurement, move the meter closer to the subject, being careful not to cast a shadow on the area to be measured.

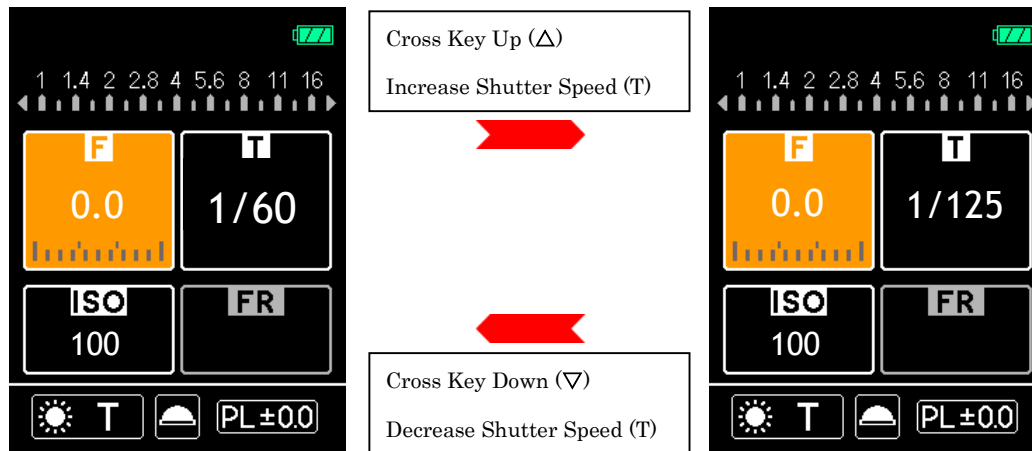
*Reflectance measurements made using an 18% grey card are roughly the same as those produced by an Incident Light reading.




2-7 Shutter Speed (T) Setup

In (T) mode, press the Cross Key  (UP Δ / DOWN ∇) to select a Shutter Speed (T). The UP (Δ) Key is used to increase Shutter Speed (T), and the Down (∇) Key to decrease it. Holding down the UP (Δ) or DOWN (∇) Key continuously increases or decreases the Shutter Speed (T).

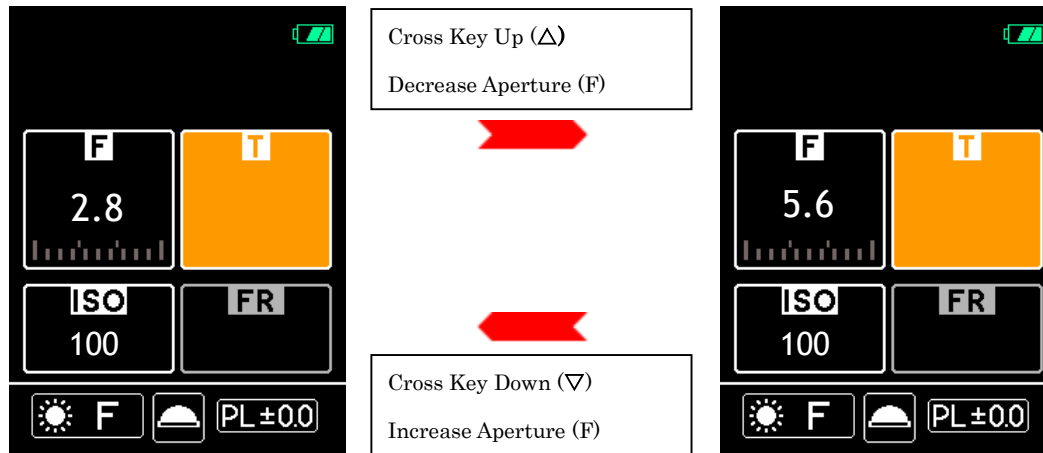
- * The displayed Aperture (F) corresponds to the Shutter Speed (T) even if modified after measurement.
- * Shutter Speed (T) in Ambient Light Measurement has 25 settings, from 60 sec to 1/8000 sec.
- * Shutter Speed (T) in Flash Light Measurement has 22 settings, from 60 sec to 1/1000 sec.



2-8 Aperture (F) Setup

Press the Cross Key  (UP Δ / DOWN ∇) to set the desired Aperture (F) in Aperture (F) Priority Mode in Ambient Light and Auto ISO Mode. The UP (Δ) Key is used to decrease the Aperture (F), and the DOWN (∇) Key to increase it. Holding down the UP (Δ) or DOWN (∇) Key continuously increases or decreases the Aperture (F).

- * The Shutter Speed (T) displayed corresponds to the Aperture (F) even if modified after measurement.
- * Aperture (F) in Ambient Light Measurement has 16 settings, from 0.5 to 90.



2-9 Program Level (PL) Setup

The Program Level feature allows you to pre-set the meter to your preferred exposure readings. By adjusting the Program Level, the meter will automatically adjust readings to overexpose or underexpose by as little as a tenth of an Aperture (F) or as much as 9/10 of Aperture (F).

- 1) On “MENU” screen, press the Cross Key **12** to move the cursor to select “SET”. Press the Select Button **13**.
- 2) On “SETTING” screen, press the Cross Key **12** to move the cursor to select “Program Level”. Press the Select Button **13**. **【See Pic. 1】**
- 3) Cursor is moved to a number by pressing Select Button **13**, and then the correction value is set using the Cross Key **12** (Up Δ / Down ∇). **【See Pic. 2】**



【Pic. 1】

- 4) Press the Cross Key **12** (Up Δ) to increase values by 0.1 steps to **<under exposure>**, press the Cross Key **12** (Down ∇) to decrease values by 0.1 steps to **<over exposure>**.
- 5) Press and hold the Cross Key **12** (Up Δ / Down ∇) for more than one second, the value will change continuously.

- 6) Once the correction value has been set, move the cursor back to “Program Level” by pressing the Select Button **13**. Move the cursor to “Return to Menu” by using the Cross Key **14**, and then press the Select Button **13** to return to the “MENU” screen. Or press the Menu Button **5** for more than one second to return to “MENU” screen.
- 7) Make sure that the corrected value appear on the measurement display.

【See Pic. 3】

- *Set values are stored in the memory even when the power is turned off.
- *Setting the Program Level to ± 0.00 cancels the automatic corrections.
- *Once the correction is set, the correction occurs across all settings.
- *This feature is also useful when it is necessary to make corrections for measurement under different type of light sources.



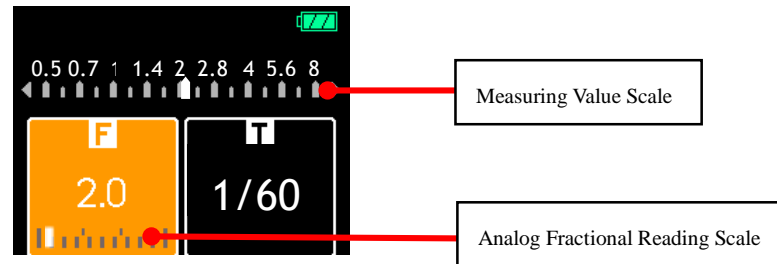
【Pic. 2】






【Pic. 3】

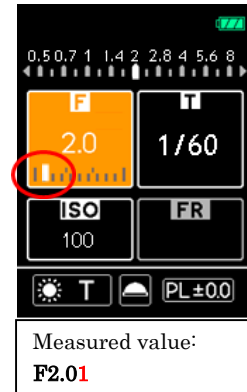
3. Measurement-Standard Operation


When metering Ambient Light, values will continuously be adjusted as long as the Measuring Button **11** is pressed. When the Measuring Button **11** is released, it displays the measurement value at that time.



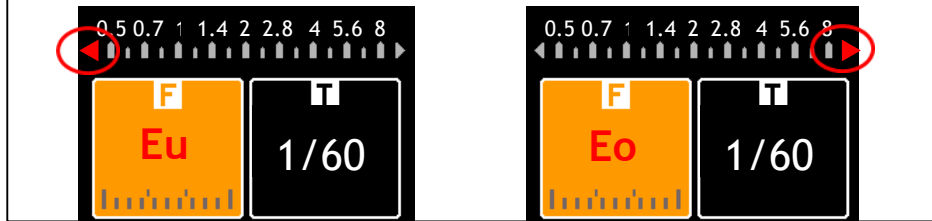
3-1 Ambient Light Measurement : Shutter Speed (T) Priority Mode

- 1) Select  on MENU display, and press the Select Button .
【See 2-3】
- 2) Check and set the ISO value. 【See 2-5】
- 3) Set the Shutter Speed (T). 【See 2-7】
- 4) Press the Measuring Button  to measure the Aperture (F).







*Once the ISO and Shutter Speed (T) are set, the aperture (F) is automatically calculated upon the pressing of the Measuring Button .

*If the measured value is outside the measurement range, **Eu** (error under) or **Eo** (error over) appears on the display.



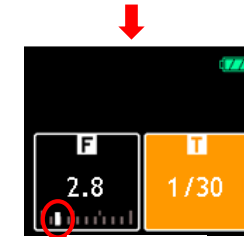
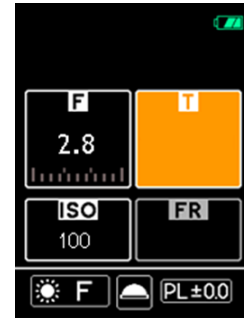
3-2 Ambient Light Measurement : Aperture (F) Priority Mode

- 1) Select  on MENU display, and press the Select Button .
- 2) Check and set the ISO value. [【See 2-5】](#)
- 3) Set the Aperture (F). [【See 2-8】](#)
- 4) Press the Measuring Button  to measure the Shutter Speed (T).

*Once the ISO and Aperture (F) are set, the Shutter Speed (T) is automatically calculated upon the pressing of the Measuring Button .




*If the measurement value is outside the measurement range, **Eu** (error under) or **Eo** (error over) appears on the display.

*If the set Aperture (F) value doesn't match the measured Shutter Speed (T), the overage is displayed on the Analog Fractional Reading Scale. [【See Pic. 4】](#)




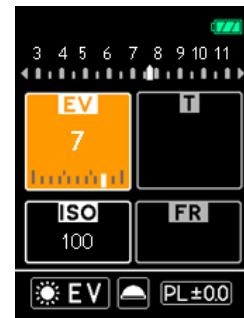
【Pic. 4】

3-3 Ambient Light Measurement : EV Mode




- 1) Select  on MENU display, and press the Select Button .
- 2) Check and set the ISO value. [【See 2-5】](#)
- 3) Take the reading by pressing the Measuring Button .

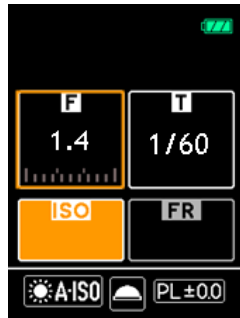
*Regardless of the Shutter Speed (T), the measurement is displayed as an EV value.

*Once the ISO value is set, the calculation of the EV value is automatically performed after the Measuring Button  is pressed.

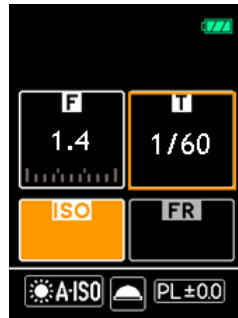


3-4 Ambient Light Measurement : Auto ISO Mode

- 1) Select  on MENU display, and press the Select Button . [【See 2-3】](#)
- 2) Press the Cross Key  (Left ◀ / Right ▶), to select either Shutter Speed (T) and Aperture (F).




Cursor: Left
Select Aperture (F)
 (※See 2-8 how to Setup)



Cursor: Right
Select Shutter Speed (T)
 (※See 2-7 how to Setup)

- 3) Take the reading by pressing the Measuring Button .

*Once the Shutter Speed (T) and Aperture (F) are set, the calculation of the ISO value is automatically performed after pressing the Measuring Button .

*If the set Aperture (F) and Shutter Speed (T) values don't match the measured ISO, the overage is displayed on the Analog Fractional Reading Scale in the Aperture (F) value Window. [【See Pic. 5】](#)


Setting Aperture: F1.4→**F1.42**
 Setting Shutter Speed: T1/60
 Measurement Result: ISO10000

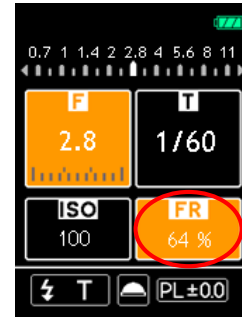


【Pic. 5】


3-5 Flash Measurement : Shutter Speed (T) Priority Mode

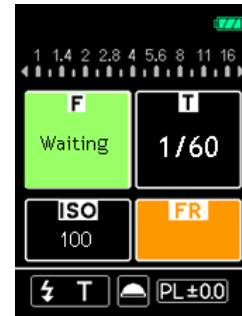
◎With synch cord

- 1) Select  on MENU display, and press the Select Button¹³.
【See 2-3】
- 2) Check and set the ISO value. 【See 2-5】
- 3) Set the Shutter Speed (T). 【See 2-7】
- 4) Connect the synch code from the flash unit to the meter's Synch Port¹⁵.
- 5) Press the Measuring Button¹¹ to fire the flash and measure the Aperture (F).
* Press the Measuring Button¹¹ again, the flash fires again and the meter takes a new reading.
- 6) Measured Aperture (F) value is displayed.
- 7) In addition, the ratio of the flash to the total amount of light is displayed as a percentage (in 1% increments) in Flash Ratio (FR) Window.



◎Without synch code

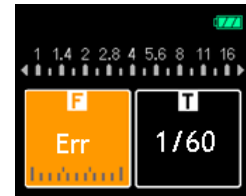
- 1) Select  on MENU display, and press the Select Button¹³.
【See 2-3】
- 2) Check and set the ISO value. 【See 2-5】
- 3) Set the Shutter Speed (T). 【See 2-7】
- 4) Press the Measuring Button¹¹. “Waiting” is displayed, and then meter is ready to take a reading.



*Press the Measuring Button **Ⓜ** again, “Waiting” is canceled.
 *Changing light receiving method by Switching Dial **Ⓢ** also cancels “Waiting”.
 *ISO and Shutter Speed (T) can be changed and set while “Waiting” is displayed.

- 5) When the meter reads a strobe flash, Aperture (F) value is displayed.
- 6) In addition, the ratio of flash to the total amount of light as a percentage (in 1% increments) in Flash Ratio (FR) Window.

*Press the Measuring Button **Ⓜ** when you want to reset the value after measurement. <Return to step 4) >
 *If the measurement value is outside the measurement range, **Eu** (error under) or **Eo** (error over) appears on the display.
 *An error is displayed when the flash waiting time is exceeded. 【See Pic. 6】
 To reset for a new reading, press the Measuring Button **Ⓜ** again.

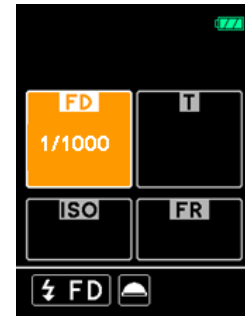


【Pic. 6】

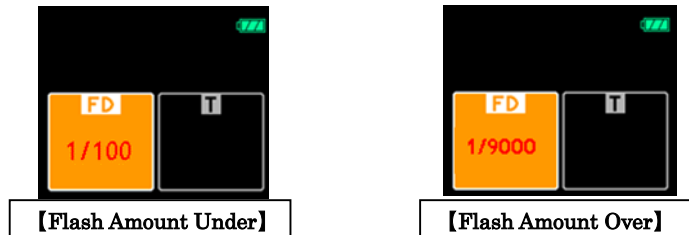
3-6 Flash Measurement : FD Mode

©With synch cord

- 1) Select **⚡ FD** on MENU display, and press the Select Button **Ⓢ**.
 【See 2-3】
- 2) Connect the synch code from the flash unit (※Sold separately) to the meter’s Synch Port **Ⓟ**.
- 3) Press the Measuring Button **Ⓜ**, the strobe fires and the meter measures the flash duration time.



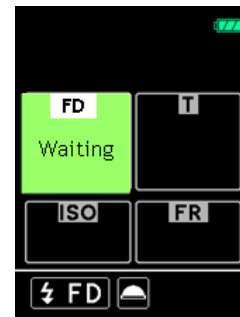
* Press the Measuring Button **11** to fire the flash again and take a new measurement.



◎Without synch cord

- 1) Select **⚡ FD** on “MENU” display, and press the Select Button **15**.
【See 2-3】
- 2) Press the Measuring Button **11**, and “Waiting” is displayed. The meter is now ready to take a reading.

*Press the Measuring Button **11** again, “Waiting” is canceled.
*Changing light receiving method by the Switching Dial **18** also cancels “Waiting”.



- 3) Upon sensing a strobe flash, flash duration time is displayed.

1. The Aperture (F) displayed, whether the measurement was taken with a synch cord or not, will display the combined value of the flash and the surrounding Ambient light. **【✖except FD Mode】**
2. Once the ISO is set, the calculation of the Aperture (F) and the Flash Ratio (FR) are automatically performed when a reading is taken. **【✖except FD Mode】**
3. The set Shutter Speed (T) needs to be within the flash synch speed parameters of the camera used.
4. The flash may fire if it is turned on when the synch cord is connected to the meter's Synch Port **15**.
5. If the contacts of the synch cord form an incomplete circuit, causing the flash to misfire, the meter will display the "Waiting" message. Press the Measuring Button **11** to clear the screen, and then check the synch cord connections before trying another reading.
6. Measuring under rapid-start fluorescent lights or other special lighting may lead to false readings. In such case, it's best to take readings using a synch cord.
7. There may be rare instances where the screen freezes and can't be reactivated by pressing buttons. If that happens, remove the batteries for 15 seconds, replace them, and turn the meter back on.
8. When metering in a bright location, the meter may not be able to detect a small amount of flash. In such cases, it may be preferable to measure the flash by connecting a synch cord.
9. If a flash has an extremely low synch voltage, it may not be fired by a connected synch cord. In such cases, it may be preferable to meter without a synch cord.

4. Measurement-Functional Operation

4-1 Data Memory Function :

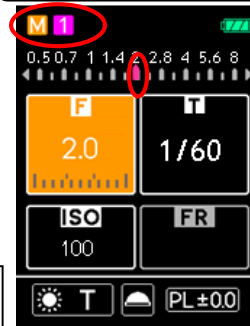
« This function can be used in: Ambient Light Shutter Speed (T) Priority Mode, Ambient Light EV Mode, Flash Light Shutter Speed (T) Priority Mode »

- a) After a reading has been taken, press the Memory Button **10** to store a measured value. “M1” will appear at the top of the screen to indicate that one value has been saved, as well as an indicator on the Measuring Value Scale.

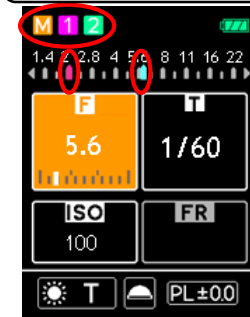
*By changing the ISO and/or the Shutter Speed (T), the calculated value is automatically adjusted, and an indicator moved on the Measuring Value Scale.

- b) Press Memory once for each reading you wish to save. Up to three readings can be stored. «M1-M3»
- c) When three measurements have been stored, pressing Memory Button **10** again will replace the first saved value. (“M1”)
- d) Press the Memory Button **10** for 1 second or more to clear the memory.
- e) Memory will also be cleared by turning Switchin Dial **18** for Incident to Reflected light.

Ambient Light Shutter Speed (T) Priority
One Value has been sotred in the memory.



Ambient Light Shutter Speed (T) Priority
Two Values has been memorized.



4-2 Average Function :

Calculate the average exposure of two or more saved readings. This is useful in variable lighting situations where there is a great variance in readings.

« This function can be used in: Ambient Light Shutter Speed (T), Priority Mode, Ambient Light EV Mode, Flash Light Shutter Speed (T) Mode »

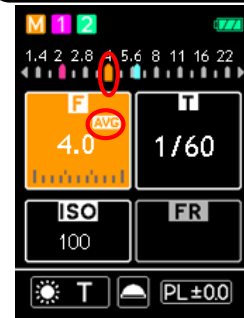
- a) Save two (or three) Measurements. 【See 4-1】
- b) Press the AVG Button **9**.
- c) Average value of two (or three) measurements is displayed, and “AVG” indicator is shown in the display of Aperture (F) value window.
- d) Press the AVG Button **9** again to clear the average value

*The “AVG” indicator will disappear, but the saved readings will still be stored and their indicators will stay on the screen.

*Pressing the Memory Button **10** for more than one second will reset all values. Values will also be reset by turning Switching Dial **18** for Incident or Reflected light.

*If the screen has turned off due to Auto Screen Off or Auto Power Off, stored values and average values are save. However if the power is turned off by pressing the Power Button **3**, all of the stored values are cleared.

Ambient Light Shutter Speed (T) Priority
Two Values has been memorized, and
measure the average value of those two values



4-3 Contrast Function :

Calculates the difference between saved average values and a newly measured value by ΔEV .

« This function can be used in: Ambient Light Shutter Speed (T) Priority Mode, Ambient Light EV Mode, Flash Light Shutter Speed (T) Priority Mode »

★ Useful for checking the lighting of other locations, such as a background, and uneven lighting. Also can produce more accurate readings when measuring lighting ratios.

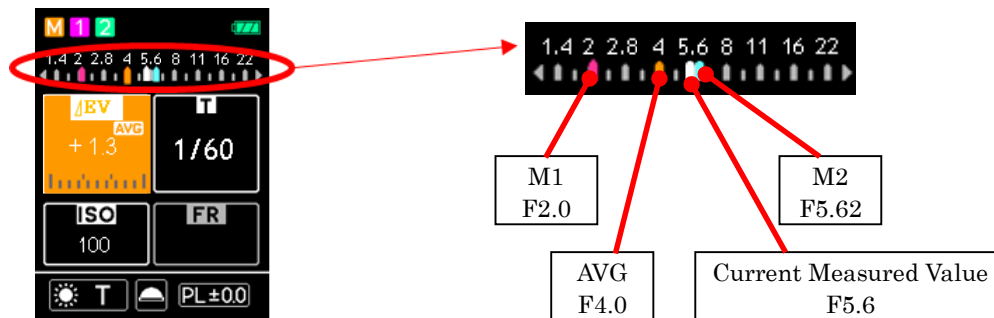
- a) Save two (or three) measurements and calculate the average value. 【See 4-1, 4-2】

* In the case of Ambient Light

- b) Press the Measuring Button **U** again. Measuring is performed continuously while it is pressed.

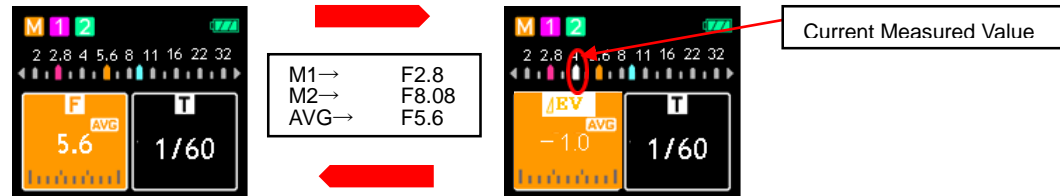
Display is the difference between the average value and the current measured value by “ ΔEV ”.

Release the Measuring Button **U**, to return to the average value display.



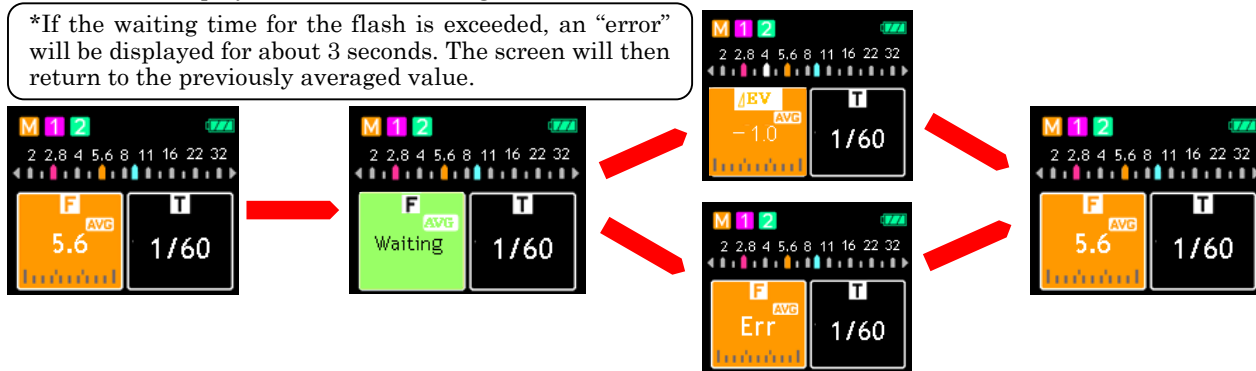
* In the case of Flash with synch code

- b) Press the Measuring Button **Ⓜ** to fire the flash. The difference between the average value while pressing the Measuring Button **Ⓜ** is displayed in Δ EV. Release the Measuring Button **Ⓜ** to return to the average value display.



* In the case of Flash without synch code

- b) Press the Measuring Button **Ⓜ**, and “Waiting” is displayed. Upon sensing a strobe flash, the difference between the average value by Δ EV will be displayed for about 3 seconds. Then the display returns to the average value.



4-4 Multiple Flash Mode

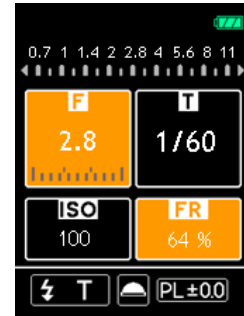
The Multiple Flash Mode is used to determine how many times the flash must be fired to obtain a desired Aperture (F). This feature can be used with or without a synch cord

- a) With or without a synch code, fire the flash once and obtain an Aperture (F) reading.
- b) By pressing the Multiple Flash Button **7**, the “MUL” icon appears. The Aperture (F) display will indicate the F-Stop necessary for an exposure produced by 2 flashes. **【See Pic. 7】**
- c) While holding the Multiple Flash Button **7**, press the Cross Key **12** (UP Δ) until the desired Aperture (F) is reached.
- d) The number on the light side of the “MUL” icon indicates the number of times the flash must be fired to achieve that Aperture (F). **【See Pic. 8】**

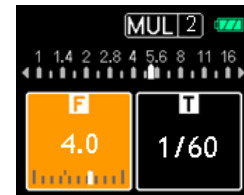
*The Aperture (F) value calculated assumes that each flash will be the same brightness.

*When Multiple Flash Button **7** is pressed, it defaults to the last value calculated. For instance, if the last calculation was for 3 times the Aperture (F) measured, pressing the Multiple Flash Button **7** will display 3 times the new measurement.

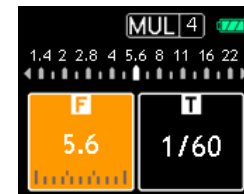
*The number will be saved even when the meter's batteries are replaced, or it is shut down by Auto Power Off. To clear the setting, turn off the meter by pressing Power Button **3**.



【Pic. 7】 An Aperture (F) of 4.0 is needed when the flash fires twice



【Pic. 8】 An Aperture (F) of 5.6 is needed when the flash fires four times



5. Specifications

Type	Hand-held meter for measuring ambient and flash light exposure	
Light Receiving Method	Incident light and Reflected light	
Sensor	Silicon Photodiode	
Light Receptor	Incident Light :	Retracted Lumisphere
	Reflected Light :	30 degree
Measuring Mode	Ambient Light :	Shutter Speed (T) Priority Mode, Aperture (F) Priority, Mode, EV Mode, Auto ISO Mode
	Flash Light :	Shutter Speed (T) Priority Mode, FD (Flash Duration) Mode
Measuring Range	Ambient Light :	Incident Light : EV0~EV19.9 (in 0.1 step)
	(ISO100)	Reflected Light : EV0~EV19.9 (in 0.1 step)
	Flash Light :	Incident Light : F1.4~F90+0.9 (in 0.1 step)
		Reflected Light : F1.4~F90+0.9 (in 0.1 step)
Flash Duration (T0.5):	1/100~1/9000s (1/100~: 1/100 step, 1/1000~: 1/200 step, 1/3000~: 1/500 step, 1/5000~: 1/1000 step)	
Repeat Accuracy	±0.1EV	
Caribration Constant	Incident light :	C=340
	Reflected light :	K=14
Display	2.4 inch TFT-LCD Color Graphic Display	
Display Range	ISO Sensitivity Value :	50~32000 (in 1/3 step)
	Shutter Speed (T):	Ambient light : 60sec~1/8000sec (plus most useful speeds : 1/25, 1/50, 1/75, 1/200, 1/400sec) Flash Light : 60sec~1/1000sec (plus most usefu speeds : 1/25, 1/50, 1/75, 1/80, 1/90, 1/100, 1/200, 1/400sec)
	Aperture (F):	0.5~90+0.9 (in 0.1 step)
	EV Value:	-1.9~29.2 (in 0.1 step)
	Multi Flash:	Fire flash once and shows multiple Aperture (F) from 2 to 9 flashes
	Flash Ratio (FR):	1~100% (in 1% increment)
	Range Limit :	Eu for Under Range, Eo for Over Range
	Error:	Err: Flash Waiting Time Over, 1/100 (in red) : Flash Amount Under, 1/9000 (in red) : Flash Amount Over
	Program Level (PL):	-0.9~+0.9 (in 0.1 step)
	Battery Check:	4 levels
Other Functions	Memory Function	3 readings
	Average Function	
	Contrast Function	
	Multiple Flash Mode	
	Auto Power Off:	60sec•90sec•120sec•300sec
	Auto Screen Off:	10sec•30sec•60sec•90sec•120sec
	Flash Waiting Time:	30sec•60sec•120sec
	Screen Brightness:	-5~+5 (in 1 step)
Battery	2 AA batteries (Alkaline, Manganses, Lithium, or Nickel base)	
Dimensions	Approx. 65 (W) x 159 (H) x 24.5 (D) mm (excluding protrusions)	
Weight	Approx. 100g (without batteries)	
Includes	Soft Case, Neck Strap, Quick Manual	

6. Instruciones Notes

1. Do not put excessive pressure on the LCD display.
2. Do not drop the meter or subject it to excessive shock, vibration or temperature extremes.
3. Do not disassemble the meter absolutely.
4. Remove battery and store in dry cool place when not in use.
5. Keep the meter clean and dust-free.
6. Dust the exterior surfaces regularly with a soft silicon treated cloth, clean cotton cloth, or use pressurized air. Never use chemical or organic solvents.
7. Contact your local retail shop or distributor for warranty and service.